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SOCIAL STATISTICS AND INDICATORS

Report on progress made in the development of a co-ordinated United Nations system data base for selected social statistics and indicators of common interest and the development of related national data bases

Report by the Secretary-General

SUMMARY

This report has been prepared in response to the request of the Statistical Commission and its Working Group at their last sessions for a report on progress of work in development of co-ordinated and integrated data bases of key social statistics and indicators at international and national levels. It focuses mainly on developments and experience in monitoring the achievement of social goals and objectives and related human development concerns set out in recent international mandates in the fields of children, population and health.

Section I describes the background of discussion in the Statistical Commission on development of a monitoring programme within the context of human development concerns, ongoing work on social statistics and indicators and existing technical co-operation efforts. Section II reviews in more detail the subject-matter content that the monitoring programme is now addressing, in terms of the specific mandates and objectives adopted by a number of intergovernmental bodies, and describes the operational plans and activities developed thus far, including pilot studies. Section III considers technical issues that need to be addressed in order for the monitoring initiative to meet its objectives of providing reliable, timely and cost-effective social data bases at national and international levels in the fields concerned. Section IV presents brief conclusions, and section V presents points for discussion by the Commission.

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CONTENTS

		Paragraphs	Page
I.	AN INTEGRATED PROGRAMME FOR MONITORING AND COMPILING SOCIAL AND ECONOMIC INDICATORS	1 - 7	3
II.	THE NEED FOR COMMON SOCIAL STATISTICS AND INDICATORS	8 - 24	4
III.	STATISTICAL AND MEASUREMENT ISSUES	25 - 54	8
	A. Goals and indicators	27 - 32	9
	B. Measurement	33 - 43	10
	C. Sources of data	44 - 46	13
	D. Data processing, analysis and interpretation	47 - 54	14
IV.	CONCLUSIONS	55	16
V.	POINTS FOR DISCUSSION	56	17
	NOTES		17
Annex.	MAJOR GOALS FOR CHILDREN AND DEVELOPMENT IN THE 1990s		19

I. AN INTEGRATED PROGRAMME FOR MONITORING AND COMPILING SOCIAL AND ECONOMIC INDICATORS

1. At its twenty-fifth session, the Statistical Commission discussed social statistics and indicators under its agenda item 8 (b). In its discussion, the Commission was encouraged to note increasing awareness of the need for social statistics and indicators in both developed and developing countries in order to assess socio-economic trends and problems and provide relevant quantitative inputs for policy formulation and programme management. 1/ In addition, the rapid recent proliferation of low-cost computer technology and global telecommunications and rapidly increasing public interest in national and international statistics of all kinds are now being reflected in greater circulation and attention to general statistical compilation and dissemination activities.

2. The Commission expressed strong support for the continuing work of the Statistical Office of the United Nations Secretariat in co-ordinating international work on social statistics and indicators and stressed the need to avoid overlapping or inconsistent methodologies and data collection efforts and to promote international comparability. As more and more national and international policy initiatives called for statistical indicators to monitor status and implementation, it was essential to maintain a strong co-ordinating framework within which series and indicators for a wide range of uses and users could be developed on a cost-effective basis. 2/

3. The Commission noted with interest the priority given by the United Nations Children's Fund (UNICEF) to designing and promoting indicators closely related to specific aspects of human welfare. It noted that such indicators should be based on data collection and compilation programmes, most importantly household surveys, designed to monitor short-term trends and provide results quickly and efficiently. More broadly, the Commission agreed that considerable efforts would be needed to ensure the collection of data and compilation of indicators needed for monitoring human aspects of development in preparation for the fourth United Nations development decade. 3/

4. In concluding its discussion of this agenda item, the Commission recommended that further work in the Statistical Office focus on the development of a co-ordinated United Nations system data base for selected social statistics and indicators of common interest at the national and international levels and agreed that a concerted effort should be made in the United Nations system for the compilation of indicators to assess human factors and social impacts of development in connection with the fourth United Nations development decade. 4/

5. The present document has been prepared in response to that request but is deliberately selective in its focus. It reports on progress in the development of a monitoring programme specifically within the context of human development concerns identified in the programmes and mandates of UNICEF, the United Nations Population Fund (UNFPA) and the World Health Organization (WHO). The monitoring programme will seek to further expand the opportunities for collection, compilation, analysis and filling gaps in key social statistics which are seen to be relevant for assessing progress in reaching social goals, especially in

developing countries. The present document reviews requirements, possibilities and limitations in collecting, compiling and disseminating the indicators called for in these programmes in the developing regions and in filling gaps in the indicators.

6. A major feature of this initiative is that it is being designed from the start within the framework of established arrangements for international co-ordination in statistics. The smooth functioning of these arrangements is a major ongoing concern and objective of the ACC Sub-Committee on Statistical Activities. The initiative is expected to promote the co-ordination of technical co-operation activities. In addition, at the level of international compilation, the established arrangements for co-ordination will also be further strengthened. These arrangements are designed to minimize reporting burden on member States and provide for the sharing of data among all interested and concerning agencies and offices as needed. These arrangements also foster the use of established statistical concepts, definitions and classifications.

7. Within the framework of these arrangements, an effective monitoring programme must ensure:

(a) Appropriate statistical capabilities and programmes at the national level, including data collection, processing, compilation, dissemination and analysis;

(b) Effective review and co-ordination of methods in selecting and defining needed indicators and filling gaps, and development of underlying statistical methodologies to ensure their validity, comparability and timeliness of results;

(c) Effective programme for analysis and dissemination of comparable indicators and supporting documentation at national, regional and international levels;

(d) Effective mobilization and co-ordination of bilateral and multilateral resources for technical co-operation in statistics to support the full range of monitoring activities.

II. THE NEED FOR COMMON SOCIAL STATISTICS AND INDICATORS

8. As the Fourth United Nations Development Decade unfolds, there is increasing consensus about the urgency of ensuring that appropriate statistical programmes are in place and methods available to assess progress in developing countries as they strive to meet their social and human development goals.

9. Two documents before the Commission note a wide range of social issues and objectives which have been articulated in international forums and instruments (E/CN.3/1991/4 and E/CN.3/1991/21). They cover employment, health, the advancement of women, children, agriculture and food, population, poverty, education and culture, elderly, disabled, shelter and settlement, communications, transportation, science and technology, and environment. Illustrative indicators in many of these fields were also noted by the Commission at its last session under its agenda item "patterns of consumption: qualitative aspects of development". 5/

10. Human development goals are increasingly clear in many fields. For example, starting with the World Plan of Action for the Implementation of the Objectives of the International Women's Year 6/ in 1975, statistics and indicators for monitoring the status and advancement of women have been developed and compiled. These have steadily been expanded and developed in national and international publications and data bases to cover a greater range and complexity of issues. The United Nations Women's Indicators and Statistics Data base (Wistat) now provides the basis for monitoring implementation of the Nairobi Forward-looking Strategies for the Advancement of Women. 7/ A general compilation of statistics and indicators on women was issued in 1988 8/ and the Statistical Office of the United Nations Secretariat reports relevant indicators for monitoring implementation of the Strategies to the Commission on the Status of Women every two years. 9/ A statistical and analytical report on trends in the situation of women from 1970 to 1990 has also been prepared by the Statistical Office and Division for the Advancement of Women of the United Nations Secretariat, with UNICEF, UNFPA and UNIFEM, to be issued in mid-1991. 10/

11. Population and related objectives are contained in the World Population Plan of Action, adopted in Bucharest in 1974, affirmed and expanded at the International Conference on Population in Mexico City in 1984, and further developed in the Amsterdam Declaration on a Better Life for Future Generations, adopted by the International Forum on Population in the Twenty-First Century, held at Amsterdam in 1989. 11/ Population goals and objectives in the Amsterdam Declaration match and complement the goals of UNICEF, WHO, UNDP and UNESCO. These goals and objectives relate, inter alia, to average number of births born per woman, universal knowledge of contraception by couples, availability and use of contraceptives including proportion of women and men using reliable methods of family planning, rates of very early marriage and teen-age pregnancy, infant and maternal mortality rates, life expectancy for women and men, geographical distribution of the population within national territories in balance with the proper use of resources, and status and role of women in the society as well as education of women. Among critical basic activities called for to plan for attainment of these goals are increased efforts to collect, analyse, disseminate and use data in population policy and programme planning and an increase in the organization of surveys and multidisciplinary research on internal and international migration to help formulate adequate policies in this area.

12. Education goals and targets are proposed in the Framework for Action adopted by the World Conference on Education for All: Meeting Basic Learning Needs in 1990. 12/ These refer to early childhood care and development, universal access to and completion of primary education, learning achievement, adult literacy, provision of basic education and training in other essential skills.

13. In the World Declaration on the Survival, Protection and Development of Children, adopted at the World Summit for Children, held on 29 and 30 September 1990, seven major goals for child survival, development and protection were adopted as well as supporting/sectoral goals relating to women's health and education, nutrition, child health, water and sanitation, basic education and children in difficult circumstances. 13/

14. The goals were formulated through extensive consultation in various international forums attended by virtually all Governments, and relevant United Nations agencies including WHO, UNICEF, UNFPA, UNESCO, UNDP, the World Bank and many non-governmental organizations. The goals are recommended for implementation by all countries where they are applicable, with appropriate adaptation to the specific situation of each country in terms of phasing, standards, priorities and availability of resources, with respect for cultural, religious and social traditions. It is expected that additional goals which are particularly relevant to a country's specific situation would be added in its national plan of action.

15. The mandate for assessing the achievement of the aforementioned goals is equally strong. The World Declaration and the Plan of Action for implementing it 14/ recommended action at the national and international levels. At the national level, "each country should establish appropriate mechanisms for the regular and timely collection, analysis and publication of data required to monitor relevant social indicators relating to the well-being of children - such as neonatal, infant and under-5 mortality rates, maternal mortality and fertility rates, nutritional levels, immunization coverage, morbidity rates of diseases of public health importance, school enrolment and achievement and literacy rates - which record the progress being made towards the goals set forth in this Plan of Action and corresponding national plans of action. Statistics should be disaggregated by gender to ensure that any inequitable impact of programmes on girls and women can be monitored and corrected. It is particularly important that mechanisms be established to alert policy makers quickly to any adverse trends to enable timely corrective action. Indicators of human development should be periodically reviewed by national leaders and decision makers, as is currently done with indicators of economic development." 15/

16. At the international level, "the governing bodies of all concerned agencies are requested to ensure that within their mandates the fullest possible support is given by these agencies for the achievement of these goals" and "the assistance of the United Nations is requested to institute appropriate mechanisms for monitoring the implementation of this Plan of Action, using existing expertise of the relevant United Nations statistical offices, the specialized agencies, UNICEF and other United Nations organs. Furthermore, the Secretary-General of the United Nations is requested to arrange for a mid-decade review, at all appropriate levels, of the progress being made towards implementing the commitments of the Declaration and Plan of Action. 16/

17. Finally, as noted in another paper before the Commission (E/CN.3/1991/4), the goals set out in the International Development Strategy have implications for specific fields of statistics, including responsiveness to social goals, the eradication of poverty and hunger, the environment, population, and the special efforts needed to deal with problems of the least developed countries insofar as determining what adjustments in statistical operations and outputs are required.

18. To commence the development of an operational plan, a working group consisting of representatives of UNICEF, UNFPA and the Statistical Office of the United Nations Secretariat (and more recently, UNDP) has initiated discussions for a statistical programme to help countries develop and establish appropriate

capabilities to monitor the achievement of social goals in the 1990s. The working group has been in the process of developing a strategy to implement the monitoring process, to be undertaken in collaboration with national Governments. The methodology will likely involve a mix of instruments and techniques in the collection of relevant data compilation of national and international data bases, analysis of key indicators and identifying and filling gaps. Household surveys, administrative statistical operations, population census data are all expected to be utilized.

19. An initial concept paper prepared by the Working Group was presented at the twenty-third session of the ACC Sub-Committee on Statistical Activities in June 1989. The Sub-Committee welcomed the document and recognized the need for such efforts but also took note of the reservations and questions raised by the representative of the World Bank concerning various aspects of the data compilation and development activities that were expected to be a part of the programme described. 17/

20. The Sub-Committee welcomed the integrated approach, which makes maximum use of ongoing national and international programmes. It was felt that the programme would provide a framework to bring together the efforts of several organizations concerned with supporting countries in their monitoring of social goals. The Sub-Committee urged the Statistical Office and other interested agencies to further elaborate the details of the proposal taking account of the views of regional commissions, specialized agencies and prospective donors to ensure that the objectives and framework of the effort would be as widely applicable and as cost effective as possible. In this context, the Sub-Committee noted a number of questions needing clarification including further specification of users and user needs, elaboration of the capability building aspect of the proposed initiative, its cost effectiveness and relationship to other ongoing programmes and mechanisms for co-ordination. The present document endeavours to detail further developments on these issues.

21. The Statistical Office of the United Nations Secretariat and Statistical Commission have been actively concerned with development of appropriate statistical methods and indicators for monitoring social concerns for the past two decades. In the field of methodology, the Handbook on Social Indicators was issued in 1989. In the further development of a programme to strengthen monitoring capacity, there are of course a number of important issues, both statistical and programmatic. Programmatic issues include reaching accord on which goals are to be targeted for measurement. It is felt that for purposes of statistical measurement, as distinct from the goals themselves, it may only be feasible to identify a limited, restricted set of indicators for which there is an urgent national policy need, at least in the early stages of the programme; otherwise the statistical effort involved may overwhelm both national and international capacities to cope.

22. A second programmatic issue is determination of which countries are to receive the initial focus of attention. Here, the criteria for selection of countries would likely involve many factors including national priorities for statistical monitoring of goals, active programmes of United Nations agencies in technical co-operation to strengthen statistical infrastructure and capability, etc.

Thirdly, there is the critical issue of how best the United Nations system, in co-operation with other multilateral and bilateral efforts, can support the effort at the country level. Related to this latter issue is a recognized imperative by all concerned both to conserve scarce intellectual and financial resources and to consolidate data collection and production efforts through realistic collaboration among all active agencies, with co-ordination being seen as the key to a successful programme. The numerous statistical issues to be addressed are discussed in section III below.

23. Further steps in the joint Statistical Office/UNICEF/UNFPA/UNDP planning of the programme entail further clarification and elaboration of the social and human goals in order to identify the appropriate indicators for monitoring progress, determining the relevance of existing data bases for compiling indicators, improving measurement instruments and collecting or otherwise compiling requisite new data. In that connection approximately 10 countries will be selected initially, on a pilot basis, and visited during the second and third quarters of 1991 to undergo assessments for determining the optimum methodology and strategy to be used for gathering the necessary data to produce indicators. The statistics divisions of regional commissions have been actively engaged in the process of identifying countries for pilot studies; thus far the countries of Algeria, Bangladesh, Ecuador, Ethiopia, Fiji, Gambia, Guatemala, Honduras, Kenya, Mali, Nigeria, Philippines, Sri Lanka, Thailand, Uruguay and Viet Nam are among those which have been suggested, although no final selection has yet been made.

24. One purpose of the pilot efforts is mainly methodological - to ascertain in a selectively chosen set of countries the range of problems, including availability and quality of each targeted indicator, nature and extent of existing gaps, and determination of methodologies for closing such gaps, all in the context of strengthening national capacity to monitor progress towards social goals. Drawing on the methodological results, another output of the pilot efforts will be a more refined and comprehensive plan for full-scale operations, including specifications for the parameters of project documents for "participating" countries to receive technical assistance. Thus, these pilot studies will also help to answer more fully issues related to the overall resources needed for the effort at the national, regional and international levels. Eventually it is thought that 60 or more countries will be targeted for special assistance by the agencies of the United Nations system, and bilateral donors to monitor progress towards social goals during the decade.

III. STATISTICAL AND MEASUREMENT ISSUES

25. Statisticians the world over face the major challenge of measuring progress towards the achievement of social and human development goals. The measurement challenge confronts both the national statistician who must assemble the basic building blocks of statistical assessment and the international statistician whose aim is to impose standards of statistical comparability in the process in order to promote global acceptance and understanding of the measures or indicators utilized.

26. Goals which have already been adopted by countries as well as additional ones which are being considered for adoption are numerous and varied. Here we discuss some of the central statistical issues that surround the problem of measuring progress towards social goals. There are a host of important issues, so the treatment in this document must be brief and selective. Statistical issues include data availability and quality; balancing practical concerns of differential monitoring capability across countries versus accepting cruder proxies; whether to identify a set of social goals as a core group for measurement purposes; determining appropriate indicators to match the goals; establishing statistical properties as well as ideal and practical criteria for gathering the raw data and producing the indicators; reaching consensus on standards of acceptable measurement with respect to methodological rigor, coverage, and sample size; promoting improved cost effectiveness of data collection and trend measurement. Some of these issues are taken up in the following paragraphs under the general headings of goals and indicators, measurement, sources of data, and data processing, analysis and interpretation.

A. Goals and indicators

27. To place the theme of this document in context, it is useful to note a list of the goals which have so far been identified and adopted at the World Summit on Children. The list is reproduced in the annex. Perusal of the list of goals immediately reveals several implications for statisticians. Most apparent, perhaps, is that the expressed goals run the gamut of specificity for purposes of attempting to measure them. While many of the goals are grounded clearly in quantifiable terms, others are much too vague to measure meaningfully. A second obvious implication is that point estimates of both levels and change as well as trend statistics will play important roles in monitoring for the 1990s. The distinction is critical since point estimates require considerably more resources than trend measurements.

28. A third implication for statisticians, not so apparent as the two mentioned, is that many of the stated goals require conceptualization of appropriate measures and indicators to assess achievement or progress. Thus, an examination of the illustrative list of statistical series and classifications prepared for the project on patterns of consumption (see annex) and the goals adopted at the World Summit for Children (see annex) indicates the kind of effort needed to transform goals into specific indicators and statistical series. Fortunately, a great deal of work has already been done on this key issue by the research community and by various United Nations agencies.

29. The United Nations Handbook on Social Indicators, published in 1989, provides such guidance within a general framework for the development of indicators. Technical documentation on statistics on women, disabled persons and other population groups, and on methods of population and housing censuses, household surveys, and civil registration and vital statistical systems developed by the Statistical Office of the United Nations Secretariat over the past 10-12 years also provides extensive technical guidance for basic data collection and for selection of indicators.

30. As a result of these efforts, there exists well developed technical documentation for the development of indicators and statistical measures pertaining to most of the social goals targeted for the 1990s, and therefore this matter is not seen as a significant statistical issue per se. A number of the indicators which have already been covered by the methodological work of the Statistical Office of the United Nations Secretariat are of relevance to the joint United Nations programme to monitor achievement of social goals. However, there remain some goals for which the lack of specificity may preclude operationalizing a measurement indicator that might suitably match the goal.

31. A fourth implication is that since many of the goals are seeking to achieve equity of one kind or another, the task of measurement must deal with the usual problems, particularly inadequate sample sizes, of producing appropriate levels of disaggregation for vulnerable subgroups.

32. Finally, there is not always a one-to-one correspondence between a particular targeted social goal and the indicator for measuring it. Indeed many goals have multiple indicators that are relevant. An important issue for countries with scarce statistical resources or underdeveloped measurement capability will be the question of whether to attempt to provide some very limited and poorer quality information for all indicators on all goals, or by contrast whether to settle upon a core group of indicators for measurement purposes that can be more realistically attempted and with greater accuracy. The role of statistical co-ordination at the international level as well as nationally is seen as a critical element in helping to shape a viable programme for social monitoring generally and providing guidance for efficiently tapping limited resources more specifically.

B. Measurement

33. One of the central issues concerns the basic strategy to be used in measuring progress towards the achievement of social goals. Ideally, the data required for such purposes would be provided by statistical series constructed from multiple sources including administrative record systems, population and housing censuses and continuing household survey programmes. Although considerable progress has been made in the development of appropriate statistical series in recent years, many countries continue to have important gaps in the data needed to reliably monitor progress in achieving even a core list of basic social goals.

34. In countries where statistical systems and programmes are not yet fully developed, a choice will have to be made whether to attempt to upgrade the existing systems or adopt a more limited-scope monitoring strategy. The former approach would entail the systematic assessment and, as necessary, enhancement of the existing administrative reporting systems (for example, national civil registration and vital statistics systems), censuses and survey programmes, while the latter approach would entail the implementation of data collection efforts focused on short-term needs to compile the requisite data to construct specific indicators. One form of the latter strategy might be to concentrate resources on pre- and post-measurement of relevant indicators in relation to specific time reference points, that is, measuring the degree of change between a specified starting and ending point, between the years 1990 and 2000 for example.

35. A second set of issues of measurement concerns the level of methodological rigor required for producing useful social indicators. Several sub-issues stand out here. The first of these is the issue of coverage. Given the focus of national coverage and equity in many of the stated goals, the importance of minority population subgroups and those residing in remote areas is self-evident. Unfortunately, such groups tend to be disproportionately missed in both facility- and population-based data collection undertakings. Moreover, within individual countries there is a continually growing demand to monitor social progress for geographic sub-regions, provinces or their equivalent, and urban and rural areas separately. Thus, special efforts will be required to ensure that key population subgroups and subnational geographic areas are adequately covered in the development of statistical programmes to monitor social goals.

36. A second, and related, sub-issue concerns appropriate sample sizes for social indicators that are derived from data collected in sample surveys. The experiences of the 1970s and 1980s have demonstrated that quite reliable estimates of selected health and demographic parameters may be obtained with sample sizes of a few thousand households (3,000-6,000), particularly for national level data. Notable among these efforts is the World Fertility Survey (WFS), the Demographic Health Survey (DHS), the Expanded Programme on Immunization Coverage Surveys (EPI), and more recently, the current surveys being carried out in connection with the Pan-Arab Project for Child Development (PAPCHILD). While all these survey efforts have greatly enhanced the feasibility of utilizing sample surveys on a regular basis as a means of monitoring programme achievements, as well as social progress more generally, there are nevertheless, important limitations which should be borne in mind. Most notable among these is the matter of sample size when subnational disaggregations are required with acceptable levels of reliability. For example, regional estimates of the sex-specific infant mortality rate are simply not reliable when only a few thousand sample cases are available at the national level, which is the prevailing situation for most multi-purpose surveys being used today.

37. Another sub-issue concerns the use of indirect methods for measuring selected indicators. The use of indirect methods for the estimation of demographic parameters is now widespread and many developing countries now use such methods as official estimates in place of vital registration data, which are known to be seriously defective. While the use of such methods has provided Governments with much more accurate demographic data than they otherwise would have had available, several cautions relating to the utilization of these methods, particularly in the context of monitoring, are in order. First, it should be recognized that although data collection protocols underlying many of the methods have been simplified to the point that they are widely applicable, the analysis and interpretation of the resulting data remains somewhat demanding in terms of the analytic skills required. This is particularly true with regard to the measurement of short-term trends in fertility and mortality. In single round surveys, for example, measurement of trends is dependent upon sets of assumptions regarding the nature and magnitude of reporting errors in the data. It is also dependent on the assumption that recent demographic experience of the country under study is still valid. Violation of these underlying assumptions can lead to findings which can be seriously misleading when some of the indirect methods are employed. In multi-round surveys, on the other hand, care must be taken to ensure that

population coverage and survey interview protocols are held relatively constant in successive survey rounds so that changes in statistical methodology do not conceal "real" changes or create apparent ones.

38. At the broad policy level, the substitutability of indirect estimation procedures for improvements in civil registration systems as the basis for demographic indicators is a question which needs to be addressed in many countries, at least over the long term. The use of such methods provides needed information for policy development and programme monitoring over the short- to medium-term, but this should not preclude efforts to resolve the administrative and operational problems which lead to defective registration systems in the first place. Ultimately, well-developed civil registration systems will provide a much sounder basis for local level programme planning and monitoring than do the occasional surveys which provide the data for indirect estimates of demographic parameters (see document E/CN.3/1991/19, which is also before the Commission).

39. A third set of issues under the heading of measurement methods concerns attempts to improve the cost effectiveness of data collection efforts. Given the scarce resources available, a general thrust over the past decade or so has involved the search for simpler, less costly and reasonably accurate (i.e., "quick and clean") measurement methodologies. Examples include the increasingly common use of standard cluster survey protocols such as the WHO's EPI and CDD (control of diarrhoeal disease) and nutritional assessment survey protocols, as well as the so-called rapid assessment techniques, alternative study designs (case-control studies in lieu of population-based surveys, for example), and non-traditional sampling techniques such as the use of non-probability methods in the second stage and lot quality assurance sampling.

40. While the experience to date with these approaches has been encouraging, some of the methods and techniques have not yet received sufficient methodological scrutiny in actual field applications for their limitations to be well understood and documented. Questions have been raised, for example, regarding the potential for bias in cluster surveys which use non-probability sampling methods for selecting ultimate sampling units within sample clusters.

41. It is useful to develop some desired or ideal properties of indicators for social monitoring purposes. WHO has enumerated four ideal qualities of health sector indicators which are generalizable to other sectors and, as such, provide a good starting point in the present discussion. These are as follows:

(a) Validity - the indicators should measure what they purport to measure (as noted and discussed in the section of this paper dealing with conceptualization of indicators);

(b) Objectivity - the indicator should be the same regardless of the respondents/sources queried in order to obtain the data underlying the indicator;

(c) Sensitivity - the indicators should be sensitive to changes in the situation being monitored;

(d) Specificity - they should reflect changes only in the situation being monitored (that is, the indicator should not be distorted by changes in extraneous phenomena).

42. In addition to the above, it might be prudent, given the general trend towards increased use of sample surveys for programme and situational monitoring purposes, to include among the desirable properties the use of probability sampling and the concept of reliability. Probability sampling is seen as a crucial statistical property for which to strive, inasmuch as its absence renders the possibility of calculating the sampling precision of an estimate (and hence indicator) impossible. With respect to reliability, the indicators should be measured with a sufficient degree of precision that it is possible to detect actual changes in the indicators at a chosen level of precision.

43. Finally, a note on the property of unbiasedness is also appropriate in the context of indicators that are derived from raw data emerging from sample surveys or censuses. Though statisticians would generally aim to minimize bias in survey undertakings, unbiased estimates are not essential in the context of monitoring trends, provided that information on the direction and magnitude of the bias exists. Rather, what is critical is that the nature of the measurement bias must remain more or less constant over time. Though the estimated level of a particular characteristic might be subject to dispute, the trend may nevertheless be measured with an acceptable level of accuracy so long as standardized statistical procedures and instruments are used at each round of measurement.

C. Sources of data

44. A number of relevant issues arise concerning appropriate sources of data for monitoring social progress. First is the need for data sources to be indicator specific. Since certain data collection strategies have comparative advantages vis-à-vis other strategies for particular types of data and/or indicators, data collection strategies should be rationalized in terms of relative efficiencies. For example, the level of coverage of health programmes tends to be more accurately measured through population-based sample surveys, as opposed to facility-based record systems. This is particularly true where the population coverage of the facility catchment area is not well known and/or where there are multiple service providers operating within the same geographic area. By contrast, many forms of morbidity cannot be measured accurately on the basis of interview surveys, since lay interviewers cannot be generally trained to diagnose morbidities.

45. A corollary to the point above is that all available and appropriate sources of data and/or data collection strategies should be utilized, bearing in mind the relevance and completeness of each. Given that additional data collection will be necessary to fill gaps, data collection options should be carefully assessed in terms of adequacy and cost-efficiency. As indicated above, these would include population and housing censuses and administrative reporting systems, particularly national civil registration systems, as well as household sample surveys. Population censuses, while important in providing important calibrating measurements for many indicators and a sampling frame for sample surveys, are not

able to provide data for short-term trends in a timely manner. National civil registration systems are, on the other hand, ideally suited to such a task. However, in a number of developing countries, the vital statistics produced by the civil registration system are not sufficiently complete or reliable to be used for monitoring purposes. As a result, considerable reliance will have to be placed on sample surveys. In these circumstances particular account needs to be taken of other international initiatives promoting related data collection activities. These include the National Household Survey Capability Programme (NHSCP), the Demographic and Health Survey programme (DHS) sponsored by USAID, Pan-Arab Project for Child Development (PAPCHILD) executed by the League of Arab States, the Inter-Agency Food and Nutritional Surveillance Programme (IFNS) sponsored by UNICEF, FAO and WHO, and the Living Standards Measurement Study (LSMS) and Social Dimensions of Adjustment (SDA) project executed by the World Bank.

46. Within this context, country-specific implementation strategies will no doubt differ on the basis of such factors as the level of development of the national statistical system, the resources available for the short-run improvement of the existing system, experience in the various data collection strategies and methodologies for constructing social indicators, the country situation and national priorities on the social development agenda, social programme implementation strategies, etc.

D. Data processing, analysis and interpretation

47. With regard to data processing concerns, a few points should be noted. In the past the general complexity and time involved to process raw data from surveys and censuses to provide basic tabulations, not to mention the production of sophisticated measures such as survival probabilities at selected ages, often meant that years would pass between the completion of field work and the release of results. With the proliferation of microcomputer technology and specialized computer software in virtually all countries over the past decade, however, such issues have come to play a much less prominent role in the production of timely and accurate social indicators. Outstanding achievements in software have virtually revolutionized both processing and analysis of data. Notable software advances include MORTPACK for mortality estimation, developed by the Population Division of the United Nations Secretariat; EASWESPOP for fertility analysis, developed by the East-West Population Institute; IMPS (Integrated Microcomputer Processing System), developed by the United States Bureau of the Census; PC-CARP for standard error and regression estimation, developed by Iowa State University; CLUSTERS for standard error estimation, developed for the World Fertility Survey; ISSA (Integrated System for Survey Analysis), developed by the Institute for Resource Development; and U-SP for survey processing, developed by the University of Kent.

48. Although hardware and software selection will continue to play a key role in determining overall processing capacity and efficiency, microcomputer and software technology have developed to a point where data processing considerations are no longer seen as the prime determinants of the timeliness and quality of data in most countries. In these countries, rational and effective management of existing data processing resources and incorporation of new technical developments and resources

into ongoing operations are likely to constitute the major data processing issues to be addressed in the 1990s.

49. In focusing on analysis and interpretation of social indicators we must distinguish between substantive and statistical levels. Substantive interpretation of data on progress towards social goals is tied very closely to the operationalized concept of the indicator vis-à-vis the goal itself. So, inasmuch as these relationships bear a recognized and rational correspondence, the interpretation will be substantively acceptable and methodologically well-grounded.

50. On the other hand, statistical interpretation and analysis will likely present issues that cannot be ignored. Among these issues are recognizing the existence of sampling and nonsampling errors in raw data and resultant indicators, and actually taking account of such errors in analysis. Moreover, there is renewed analytical interest in development and use of summary or composite indexes such as UNDP's human development index (HDI) and a proposed social progress index in Latin America. Such indexes raise a number of technical, conceptual and analytical issues upon which there is no consensus. For example, a composite index number requires the component factors or indicators to be appropriately weighted. How to arrive at a system of weighting that would be generally accepted for international use remains problematic from a substantive and statistical perspective. These issues were considered at length in the United Nations study published in 1977, The Feasibility of Welfare-oriented Measures to Supplement the National Accounts and Balances: A Technical Report. This study concluded, "In the end, however, it must be recognized that the concept of level of living is by its nature intensely complex and incapable of reduction to simple quantitative terms. In this lies the importance, for any evaluation of social and economic priorities in different parts of the world, of research into and publicity for the different patterns or profiles of living and the various ways in which scarce resources (not only monetary resources) are used for alternative ends" (para. 200). 18/ The question of a composite measure closely linked to national accounts was also considered by the Statistical Commission in 1976 at the request of the Committee for Development Planning (paras. 22-29 of the report of the Commission's nineteenth session). 19/ The Commission agreed that it would be inappropriate to try to develop international standards for an alternative aggregate to GDP to measure welfare and that this was a more suitable area for research than for statistical compilation. A variety of statistics were needed to measure welfare. 20/ Nevertheless, interest among users has continued to be strong and work on composite indexes is continuing. Accordingly, statisticians and statistical services face a choice between contributing their expertise to development work in this field in the hope that better and more valid indexes will result or remaining both critical and aloof in the hope that their noninvolvement will in some way reduce the visibility or authority of the indexes produced.

51. Turning to the matter of sampling error, statisticians have rather painstakingly encouraged users of data based on sample surveys to take account of sampling error in interpreting results, but the record has been mixed. Many users seem to be content with only a general acknowledgment that their data are subject to various limitations. The relationship between sampling errors and estimates, as well as the related confidence intervals, remains a difficult concept to convey to

non-statisticians, which may explain why not much emphasis is placed on these matters when data are presented.

52. In addition to the matter of calculating sampling errors to help evaluate the quality of survey-based estimates (and resulting indicators), an important issue in the presentation of results concerns taking account of the standard errors in drawing conclusions, particularly with respect to estimated changes. This concern is especially critical for purposes of monitoring achievement of social goals, since estimates of the change between 1990 and 2000 for various targeted goals will likely be the most utilized model for assessing progress.

53. The pervasive problem of nonsampling error in surveys and censuses must also be mentioned. With the concept of "total survey error" gaining increasing usage, it is generally recognized that of its two dichotomous components, nonsampling error plays a much more prominent role in the overall quality of data than sampling error whenever samples are sufficiently large, which is generally the case in the kind of large-scale, multipurpose surveys that are likely to be used to produce much of the data needed for social monitoring. The sources of nonsampling error are so numerous, including nonresponse, interviewer errors, recall errors, respondent conditioning, data entry errors, etc., that it remains extremely difficult for statisticians to obtain even an approximate measure of the totality of nonsampling error present in any given survey or census. Often the best that can be done, given extremely limited resources for independent evaluation studies, is to indicate to users what types of nonsampling errors may be present in the data, in lieu of carrying out systematic research to obtain actual measures of the magnitudes of such errors.

54. As mentioned above, one way of minimizing the effect of nonsampling error for purposes of social monitoring is to utilize the same methodology (in terms of survey instruments and operational procedures) when measuring change, inasmuch as biases contributed by various forms of nonsampling error may have minimal effect on estimated change, as opposed to level.

IV. CONCLUSIONS

55. Progress towards the achievement of social and human development goals by the year 2000 can only be monitored through the collection and dissemination of valid, reliable and timely statistical information. The measurement effort needed is complex and technically demanding. It will require dedicated efforts on the part of national and international statisticians, extensive investments in human and financial resources, strong and well focused co-ordination, continuing development of statistical infrastructure and innovative techniques for measuring changes and monitoring progress.

V. POINTS FOR DISCUSSION

56. The Commission may wish to:

(a) Comment on appropriate general concepts and strategies for statistically monitoring the achievement of social goals;

(b) Consider the type and extent of programme and co-ordination requirements for statistical collection, compilation and dissemination to provide the statistics and indicators needed for monitoring;

(c) Suggest the main features of a full-scale monitoring programme at the national level to be explored in pilot studies now in the planning stages;

(d) Comment on technical and methodological issues in statistics which need to be addressed to ensure that the social statistics and indicators collected are valid, reliable, timely, widely available and comparable at national and international levels for monitoring purposes; and

(e) Suggest appropriate methods of international co-ordination and programme development to assist countries in this field, bearing in mind the need to concentrate limited resources on a strictly limited number of objectives.

Notes

1/ Official Records of the Economic and Social Council, 1989, Supplement No. 3 (E/1989/21), para. 129.

2/ Ibid., para. 135.

3/ Ibid., para. 138.

4/ Ibid., para. 141 (b) and (c).

5/ See E/CN.3/1989/14, annex.

6/ See Report of the World Conference of the International Women's Year, Mexico City, 19 June-2 July 1975 (United Nations publication, Sales No. E.76.IV.1), chap. II.

7/ See Report of the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development and Peace, Nairobi, 15-26 July 1985 (United Nations publication, Sales No. E.85.IV.10), chap. I.

8/ Compendium of Statistics and Indicators on the Situation of Women 1986, Series K, No. 5 (United Nations publication, Sales No. E/F.88.XVII.6).

Notes (continued)

9/ See, for example, "Statistics and indicators on women's participation in the economy", in 1989 World Survey on the Role of Women in Development (United Nations publication, Sales No. E.89.IV.2).

10/ The World's Women: 1970-1990, Series K, No. 8 (United Nations publication, in press).

11/ See A/C.2/44/6.

12/ See Final Report of the World Conference on Education for All: Meeting Basic Learning Needs, Jomtien, Thailand, 5-9 March 1990, (New York, UNICEF, 1990), appendix 2.

13/ See World Declaration on the Survival, Protection and Development of Children (New York, UNICEF, 1990).

14/ Plan of Action for Implementing the World Declaration on the Survival, Protection and Development of Children in the 1990s (New York, UNICEF, 1990).

15/ Plan of Action ..., para. 34 (v).

16/ Plan of Action ..., para. 35.

17/ ACC/1989/PG/6, paras. 57-62.

18/ Series F, No. 22 (United Nations publication, Sales No. E.77.XVII.12), para. 200.

19/ Official Records of the Economic and Social Council: Sixty-second Session, Supplement No. 2 (E/5910), paras. 22-29.

20/ Ibid., para. 23.

Annex

MAJOR GOALS FOR CHILDREN AND DEVELOPMENT IN THE 1990s*

I. MAJOR GOALS FOR CHILD SURVIVAL, DEVELOPMENT AND PROTECTION

(a) Between 1990 and the year 2000, reduction of infant and under-5 child mortality rate in all countries by one third or to 50 and 70 per 1,000 live births respectively, whichever is less;

(b) Between 1990 and the year 2000, reduction of maternal mortality rate by half;

(c) Between 1990 and the year 2000, reduction of severe and moderate malnutrition among under-5 children by half;

(d) Universal access to safe drinking water and to sanitary means of excreta disposal;

(e) By the year 2000 universal access to basic education and completion of primary education by at least 80 per cent of primary school-age children;

(f) Reduction of the adult illiteracy rate (the appropriate age group to be determined in each country) to at least half its 1990 level with emphasis on female literacy;

(g) Improved protection of children in especially difficult circumstances.

II. SUPPORTING/SECTORAL GOALS

A. Women's health and education

(i) Special attention to the health and nutrition of the female child and to pregnant and lactating women;

(ii) Access by all couples to information and services to prevent pregnancies which are too early, too closely spaced, too late or too many;

(iii) Access by all pregnant women to prenatal care, trained attendants during child birth and referral facilities for high risk pregnancies and obstetric emergencies;

(iv) Universal access to primary education with special emphasis for girls and accelerated literacy programmes for women.

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* From the Plan of Action for Implementing the World Declaration on the Survival, Protection and Develoment of Children.

B. Nutrition

(i) Reduction in severe, as well as moderate malnutrition among under-5 children by half of 1990 levels;

(ii) Reduction of the rate of low birth weight (2.5 kg or less) to less than 10 per cent;

(iii) Reduction of iron deficiency anemia in women by one-third of 1990 levels;

(iv) Virtual elimination of iodine deficiency disorders;

(v) Virtual elimination of vitamin A deficiency and its consequences, including blindness;

(vi) Empowerment of all women to exclusively breast-feed their children for four to six months and to continue breast-feeding with complementary food, well into the second year;

(vii) Growth promotion and its regular monitoring to be institutionalized in all countries by the end of the 1990s;

(viii) Dissemination of knowledge and supporting services to increase food production to ensure household food security.

C. Child health

(i) Global eradication of poliomyelitis by the year 2000;

(ii) Elimination of neonatal tetanus by 1995;

(iii) Reduction by 95 per cent in measles deaths and reduction by 90 per cent of measles cases compared to pre-immunization levels by 1995, as a major step to the global eradication of measles in the longer run;

(iv) Maintenance of a high level of immunization coverage (at least 90 per cent of children under one year of age by the year 2000) against diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis and against tetanus for women of child-bearing age;

(v) Reduction by 50 per cent in the deaths due to diarrhoea in children under the age of five years; and 25 per cent reduction in the diarrhoea incidence rate;

(vi) Reduction by one third in the deaths due to acute respiratory infections in children under five years.

D. Water and sanitation

(i) Universal access to safe drinking water;

(ii) Universal access to sanitary means of excreta disposal;

(iii) Elimination of guinea-worm disease (dracunculiasis) by the year 2000.

E. Basic education

(i) Expansion of early childhood development activities including appropriate low-cost family- and community-based interventions;

(ii) Universal access to basic education, and achievement of primary education by at least 80 per cent of primary school-age children through formal schooling or non-formal education of comparable learning standard, with emphasis on reducing the current disparities between boys and girls;

(iii) Reduction of the adult illiteracy rate (the appropriate age group to be determined in each country) to at least half its 1990 level, with emphasis on female literacy;

(iv) Increased acquisition by individuals and families of the knowledge, skills and values required for better living, made available through all educational channels, including the mass media, other forms of modern and traditional communication, and social action, with effectiveness measured in terms of behavioral change.

F. Children in difficult circumstances

Provide improved protection of children in especially difficult circumstances and tackle the root causes leading to such situations.